ONTARIO MINISTRY OF ENVIRONMENT
36936000023326

OPERATING SUMMARY

1974

CITY OF

CAMBRIDGE (PRESTON)

WATER POLLUTION CONTROL PLANT

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Cambridge (Preston) : water pollution control plant.

81517

Ontario

MINISTRY OF THE ENVIRONMENT

MINISTER
Honourable William G. Newman

DEPUTY MINISTER
E. Biggs

ASSISTANT DEPUTY MINISTER
REGIONAL OPERATIONS
J. Barr

REGIONAL OPERATIONS DIVISION

DIRECTOR, WEST-CENTRAL REGION
C. Macfarlane

MANAGER, UTILITY OPERATIONS
B. Hansler

CAMBRIDGE (PRESTON)

WATER POLLUTION CONTROL PLANT

MINISTRY OF THE ENVIRONMENT

1974 ANNUAL OPERATING SUMMARY

prepared by

Plant Performance Unit

TECHNICAL SERVICES BRANCH

T. Cross, Director

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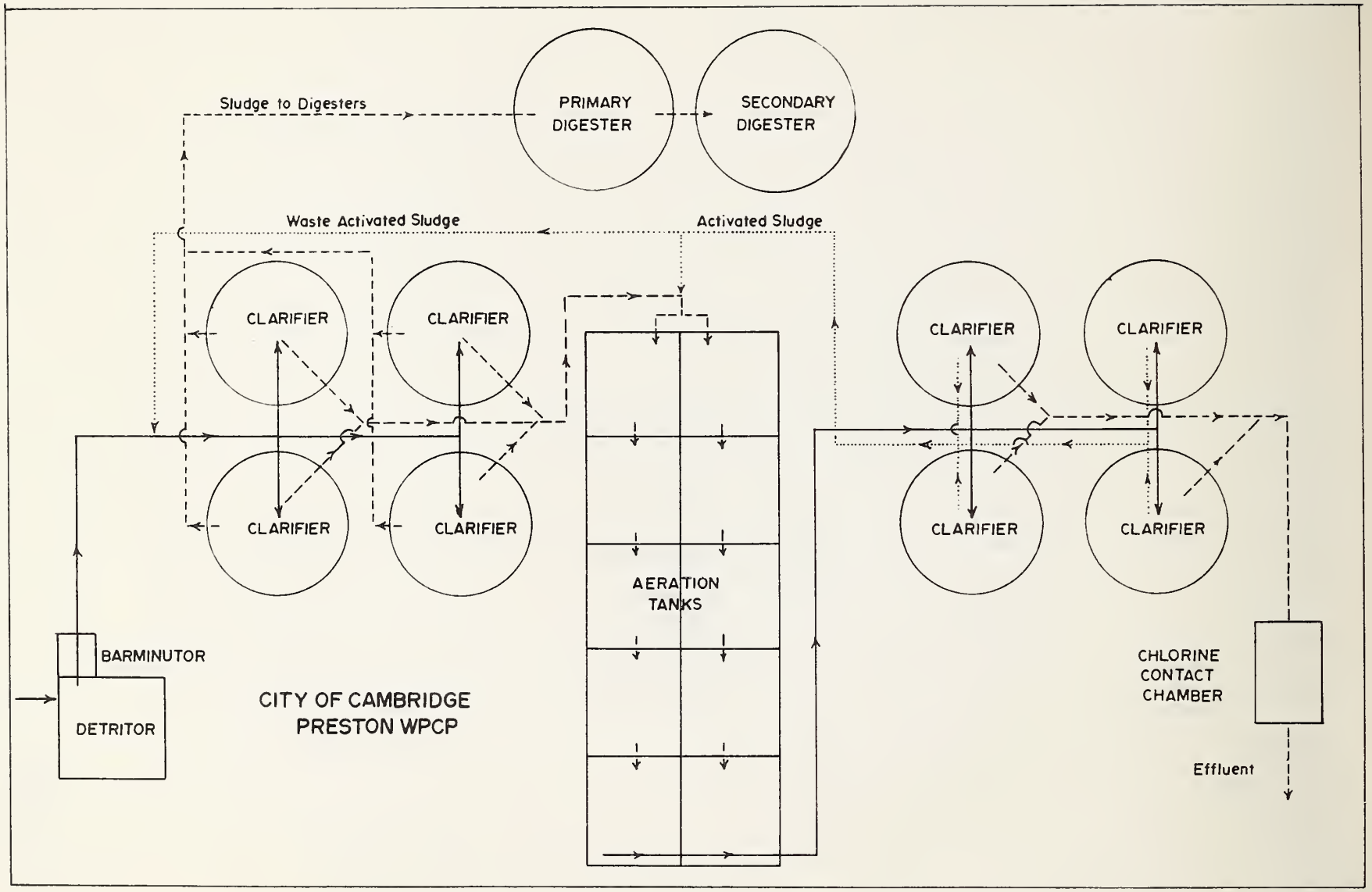

Sludge to Digesters
PRIMARY DIGESTER
SECONDARY DIGESTER
Waste Activated Sludge
Activated Sludge
CLARIFIER
CLARIFIER
CLARIFIER
CLARIFIER
CLARIFIER
CLARIFIER
CLARIFIER
CLARIFIER
AERATION TANKS
BARMINUTOR
DETRITOR
CITY OF CAMBRIDGE
PRESTON WPCP
CHLORINE CONTACT CHAMBER
Effluent

DESIGN DATA

PROJECT City of Cambridge (Preston) WPCP

PROJECT NO. 2-0046-59

TREATMENT Activated Sludge

DESIGN FLOW 3.71 mgd

BOD - Raw Sewage 300 mg/l
- Removal 95%

SS - Raw Sewage 350 mg/l
- Removal 90%

PRIMARY TREATMENT

Grit Removal

Type: Dorr detritor
Size: One 20' x 20' x 1½' (3,740 gal)
Retention: 2.1 min

Comminution

Type: Barminutor
Size: Model C (36")

Primary Sedimentation

Type: Dorr
Size: Four 50' dia x 10' swd (492,000 gal)
Retention: 3.2 hr
Loading: Surface, 460 gal/ft^2/day
Weir, 5730 gal/ft/day

Sewage Lift Pumps

Type: Worthington
Size: Three: 1050 gpm

SECONDARY TREATMENT

Aeration Tanks

Type: Mechanical; single-pass
Size: Two 150' x 30' x 13' (731,000 gal)
Retention: 4.7 hr

Aerators

- Ten Ames-Crosta

Secondary Sedimentation

Type: Dorr
Size: Four 50' dia x 10' swd (492,000 gal)
Retention: 3.2 hr
Loading: Surface, 460 gal/ft^2/day
Weir, 5730 gal/ft/day

CHLORINATION

Type: F & P
Size: One 400 lb/day

Chlorine Contact Chamber

Size: One 30' x 15' x 6' 8" (18,700 gal)
Retention: 15 min

OUTFALL

- to Grand River

SLUDGE HANDLING

Holding Tank

Size: One 20' x 20' x 11' (4,400 cu ft or 27,400 gal)

Digestion System

- Two-Stage

Primary Digester

Size: One 50' dia x 38' awd (79,800 ft^3)

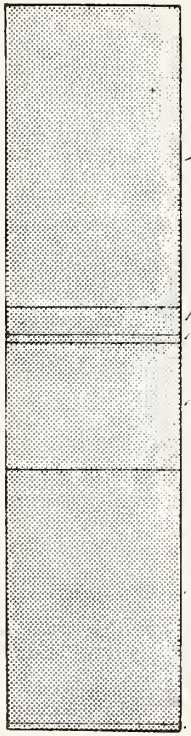
Secondary Digester

Size: One 50' dia x 38' awd (79,800 ft^3)

Sludge Recirculating Pump

Type: Carter Duplex Mod 805
Size: 200 gpm at 40' TDH

ANNUAL COSTS



1974 OPERATING COSTS

SALARIES & WAGES	40 %
EMPLOYEE BENEFITS	4 %
TRANSPORTATION & COMMUNICATIONS	1 %
SERVICES	18 %
SUPPLIES & EQUIPMENT	36 %
AQUISITION/CONSTRUCTION OF PHYSICAL ASSETS	0 %
TRANSFER PAYMENTS	0 %
OTHER TRANSACTIONS	1 %

YEARLY OPERATING COSTS

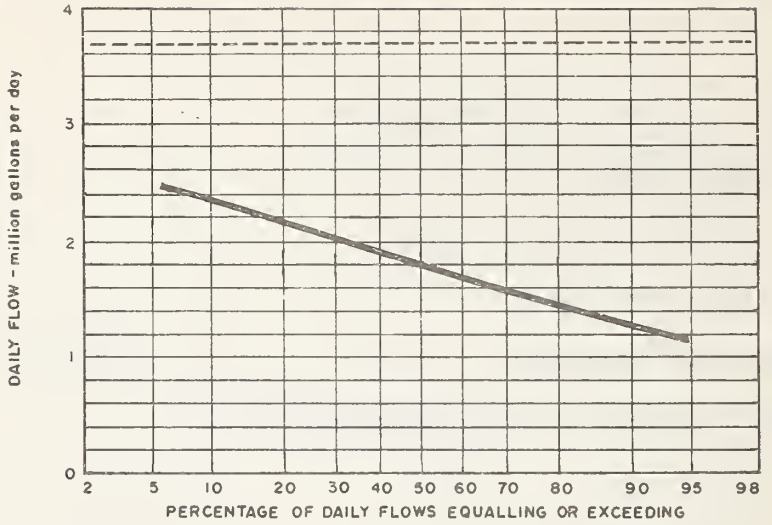
YEAR	SEWAGE TREATED in million gallons	TOTAL OPERATING COSTS	UNIT COSTS $/M G	UNIT COSTS ¢/lb BOD
1974	668	145,092	217	4

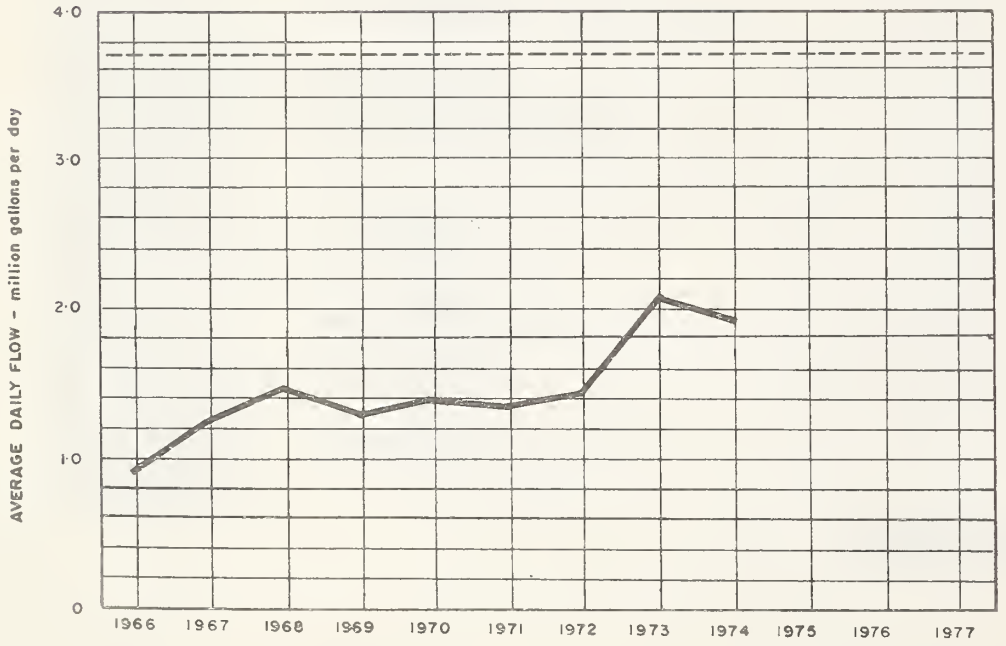
OPERATING EXPENDITURES

Regular Staff	$ 56413	$
Casual (Unclassified) Staff	1672	
TOTAL SALARIES AND WAGES		58085
TOTAL EMPLOYEE BENEFITS		5997
TOTAL TRANSPORTATION AND COMMUNICATIONS		1267
Insurance	2268	
Sludge Haulage	22695	
Repairs and Maintenance	431	
Other Services	463	
TOTAL SERVICES		25857
Machinery and Equipment	9972	
Chemicals	11990	
Utilities	22899	
Other Supplies and Equipment	7296	
TOTAL SUPPLIES AND EQUIPMENT		52157
TOTAL AQUISITION/CONSTRUCTION OF PHYSICAL ASSETS		
TOTAL TRANSFER PAYMENTS		
OTHER TRANSACTIONS		1729
GRAND TOTAL	GRAND TOTAL	$ 145092

PROCESS DATA

FLOWS



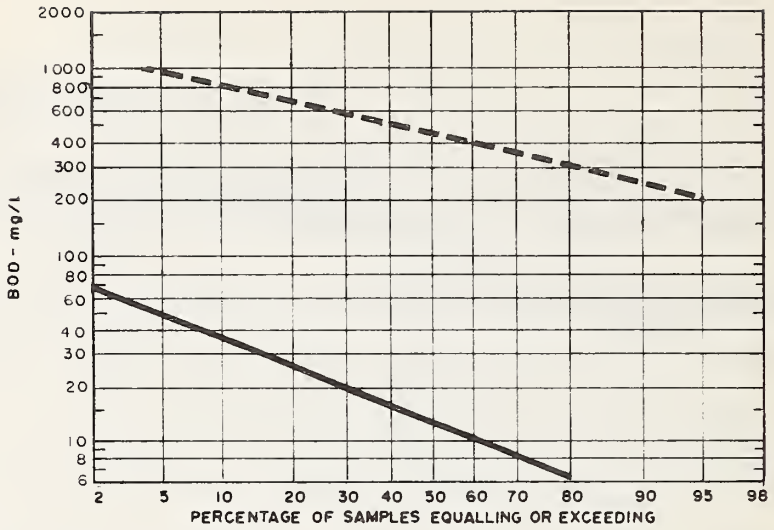


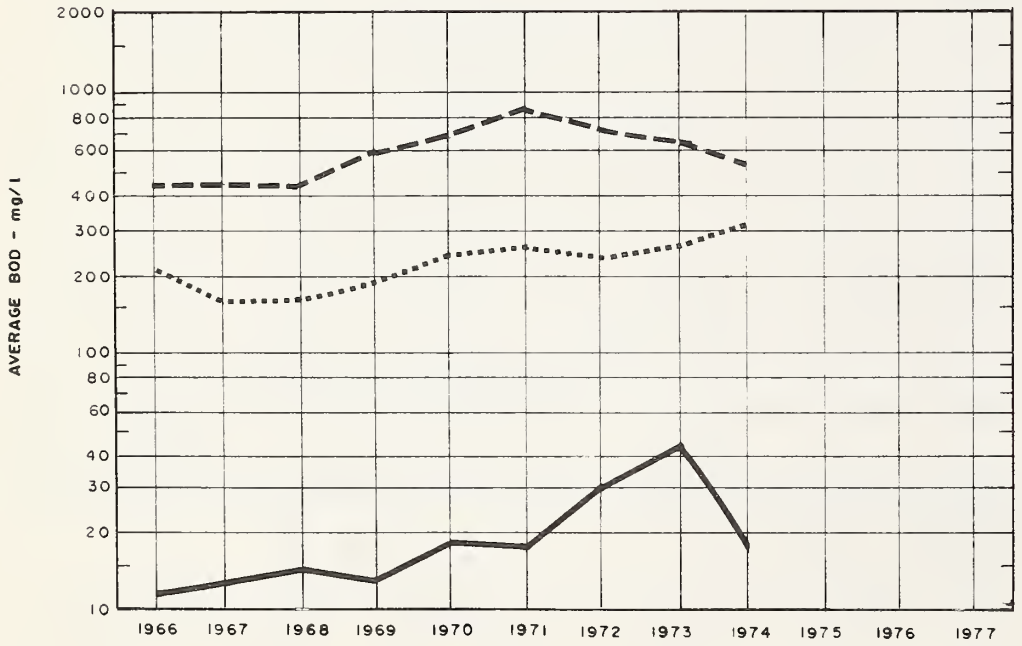
DESIGN CAPACITY - - - - - - - -

PLANT PERFORMANCE

MONTH	FLOWS			BIOCHEMICAL OXYGEN DEMAND				SUSPENDED SOLIDS				PHOSPHORUS	
	TOTAL FLOW	AVERAGE DAY	MAXIMUM DAY	INFLUENT	EFFLUENT	REDUCTION		INFLUENT	EFFLUENT	REDUCTION		INFLUENT	EFFLUENT
	million gallons	mil. gal	mgd	mg/l	mg/l	%	10^3 pounds	mg/l	mg/l	%	10^3 pounds	mg/l P	mg/l P
JAN	64.05	2.07	2.60	788	6	99	501	757	5	99	482	11.8	.9
FEB	63.79	2.28	2.87	675	10	99	424	682	12	98	427	13.5	1.3
MAR	65.25	2.10	3.02	580	8	99	373	509	10	98	326	9.9	5.0
APR	58.03	1.93	2.51	475	15	97	267	773	9	99	443	7.0	.6
MAY	65.68	2.12	4.09	380	32	92	229	808	14	98	521	7.4	.7
JUNE	54.20	1.81	2.12	483	12	97	255	656	12	98	349	5.3	.5
JULY	49.97	1.61	1.98	509	12	98	248	750	19	97	365	5.3	.5
AUG	50.06	1.61	1.91	370	11	97	180	635	19	97	308	5.0	.5
SEPT	50.14	1.67	2.11	380	5	99	188	894	22	98	437	8.1	.5
OCT	49.60	1.60	2.28	610	18	97	294	1046	32	97	503	6.7	.6
NOV	49.48	1.65	2.38	443	52	88	193	1189	82	93	547	7.6	2.4
DEC	47.88	1.54	2.50	494	45	91	215	800	286	64	246	9.7	2.6
TOTAL	668.13	-	-	-	-	-	3220	-	-	-	5030	-	-
AVG.		1.83	MAXIMUM 4.09	500	18	96	268	793	40	95	419	7.1	1.0
No. of Samples	-	-	-	57	45	-	-	266	256	-	-	100	88

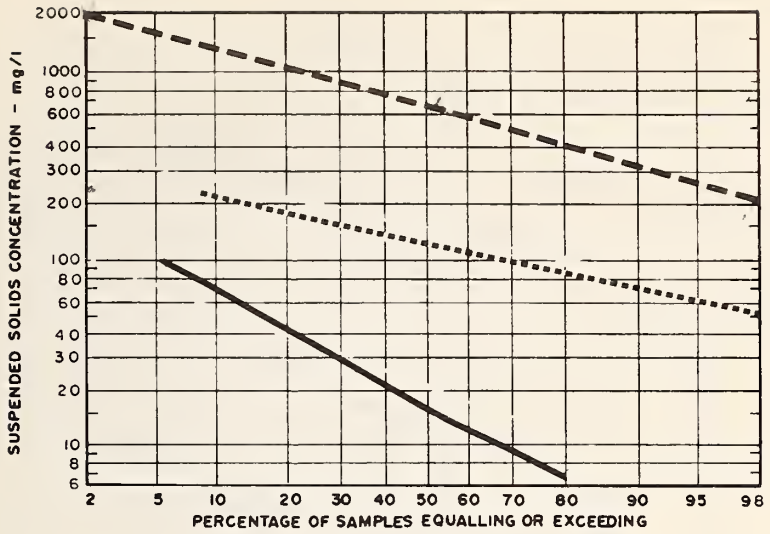
BIOCHEMICAL OXYGEN DEMAND

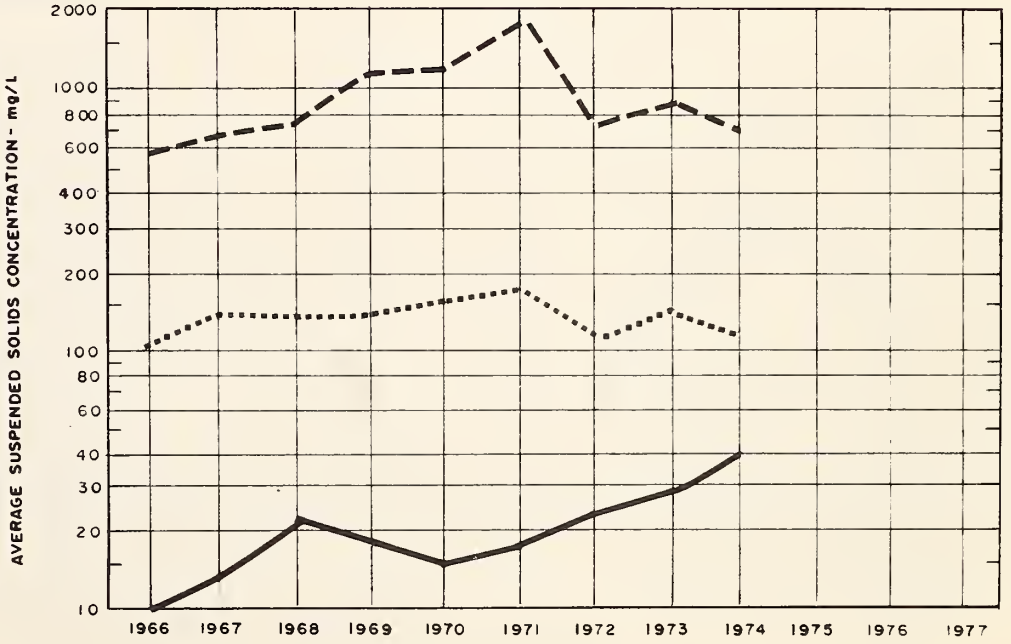




PLANT INFLUENT
PRIMARY EFFLUENT
PLANT EFFLUENT

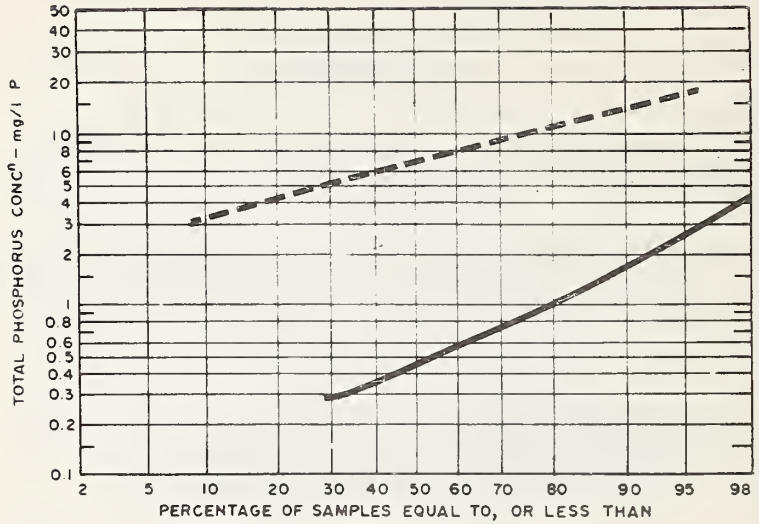
SUSPENDED SOLIDS

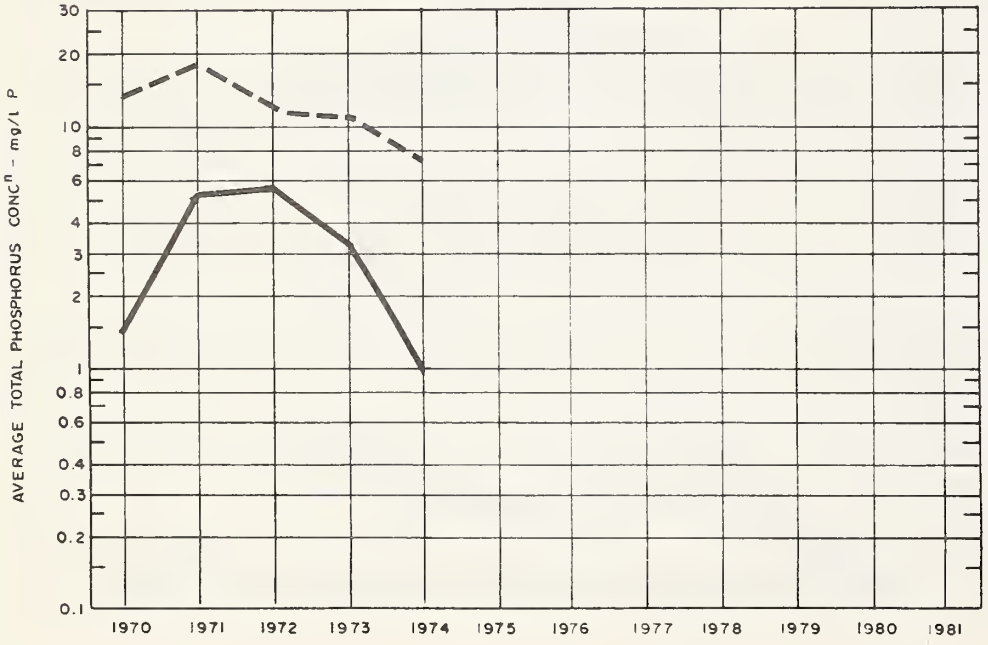




PLANT INFLUENT
PRIMARY EFFLUENT
PLANT EFFLUENT

PHOSPHORUS





PLANT INFLUENT

PLANT EFFLUENT

TREATMENT DATA

MONTH	GRIT	CHLORINATION		PRIMARY EFFLUENT		AERATION			SLUDGE DIGESTION and DISPOSAL							
									RAW SLUDGE			DIGESTED SLUDGE			SUPER-NATANT	
	QUANTITY REMOVED	Cl_2 USED	AVG DOSE	BOD	SUSPENDED SOLIDS	MLSS CONC	F/M	AIR	QUANTITY	TOTAL SOLIDS	VOL. SOLIDS	QUANTITY	TOTAL SOLIDS	VOL SOLIDS	T. S.	AMOUNT HAULED
	cubic feet	10^3 pounds	mg/l	mg/l	mg/l	mg/l	day^{-1}	$\frac{1000\ ft^3}{lb\ BOD}$	10^5 gallons	%	%	10^5 gallons	%	%	%	cubic yards
JAN	100	1.9	3.0	133	81	2400	.17		5.8	5.8		3.6				2166
FEB	78	1.8	2.8	160	101	2900	.17		4.6	6.2		3.2				1888
MAR	69	2.5	3.8	140	103	2400	.17		3.7	5.3		3.7				2207
APR	215	2.1	3.7	180	94	2000	.25		5.1	5.9		3.6				2160
MAY	155	2.7	4.2	180	94	2200	.25		4.4	5.0		3.3				1944
JUNE	82	3.1	5.7	211	101	2300	.23		3.3	2.9		3.2				1920
JULY	101	2.7	5.4	320	106	1700	.42		3.8	3.6		4.1				2412
AUG	124	3.5	6.9	314	118	2100	.33		4.0	3.9		3.3				1956
SEPT	153	2.5	5.0	326	155	2600	.28		5.4	2.9		4.1				2424
OCT	122	3.1	6.3	345	130	2900	.27		4.7			3.3				1956
NOV	114	3.5	7.1	324	159	3400	.22		4.6			3.8				2232
DEC	87	3.4	7.1	384	144	3500	.23		2.5			2.6				1572
TOTAL	1400	32.8	-	-	-	-	-	-	51.9	-	-	41.8	-	-	-	24837
AVG.	2 cu.ft/mil gal	2.7	4.9	304	115	2600	.25		4.3	4.6		3.5				2070

Date Due

ONTARIO. MINISTRY OF THE ENVIRONMENT.
TD227/C363/P79/W38/MOE
CAMBRIDGE (PRESTON) WATER POLLUTION CONTROL PLANT.
ANNUAL OPERATING SUMMARY.
1974

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